MDR-RF430/RF450

SERVICE MANUAL

AEP Model

Ver 1.1 2000.12

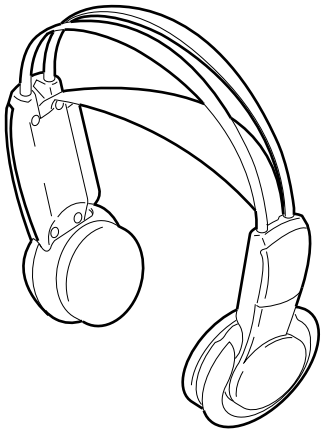


Illustration : MDR-RF430

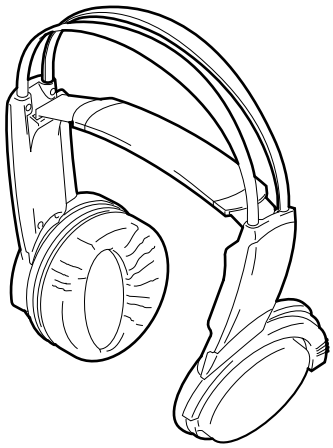


Illustration : MDR-RF450

MDR-RF430 is the component model block one in the MDR-RF430RK.
MDR-RF450 is the component model block one in the MDR-RF450RK.

COMPONENT MODEL NAME FOR MDR-RF430RK/RF450RK

	MDR-RF430RK	MDR-RF450RK
Wireless Headphones	MDR-RF430	MDR-RF450
Transmitter	TMR-RF450R	TMR-RF450R

SPECIFICATIONS

Headphone

Charging and using hours

Approx. charging hours	Approx. using time*
1	50 minutes
24**	20 hours

* at 1kHz 1mW + 1mW output
** the hours required to fully charge empty batteries

Battery life

Battery	Approx. hours*
Sony alkaline battery LR6 (SG)	60
Sony battery R6P (SR)	30

* at 1kHz 1mW + 1mW output

Power source DC 3V : 2 x R6 (size AA) battery or 2 x supplied NC-AA-HJ Ni-Cd rechargeable battery
Mass Approx. 215g (7.6oz.) incl.Ni-Cd batteries (MDR-RF430RK)
Approx. 265g (9.4oz.) incl.Ni-Cd batteries (MDR-RF450RK)
Supplied Ni-Cd rechargeable batteries
Model name NC-AA-HJ
Voltage 1.2V
Capacity 600mAh

Design and specifications are subject to change without notice.

WIRELESS STEREO HEADPHONES

MICROFILM

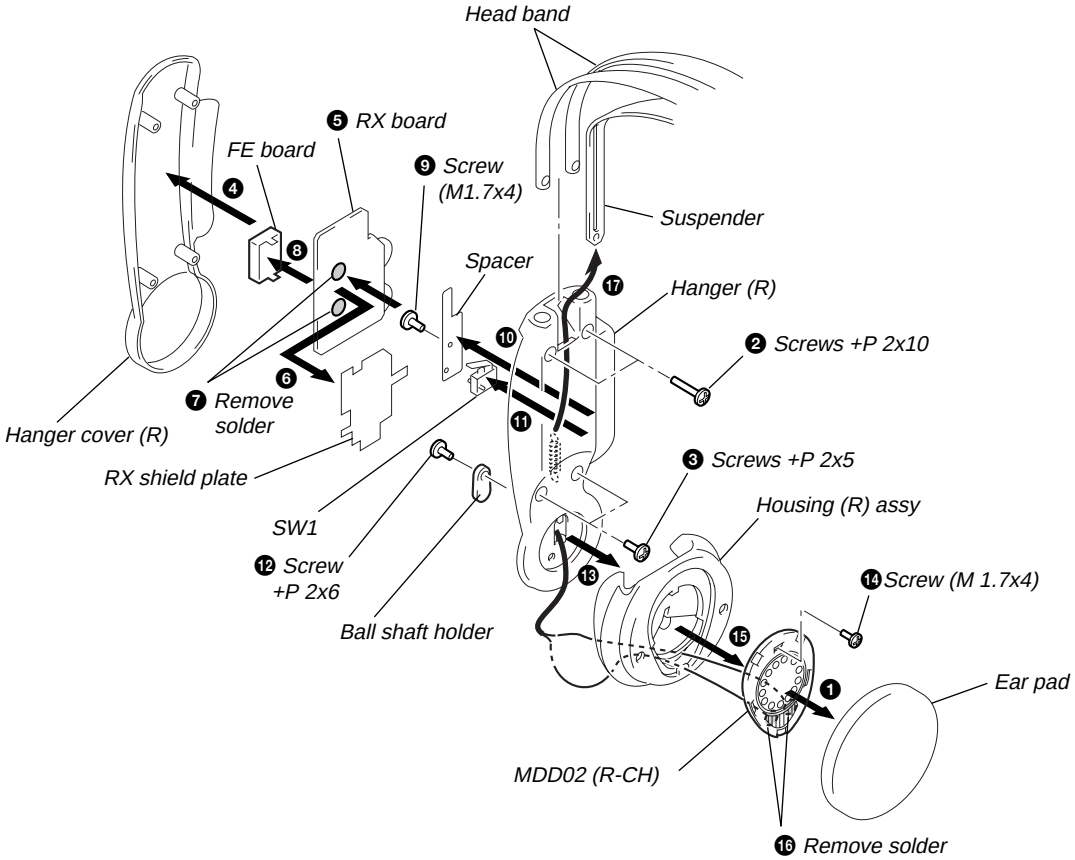
SONY

SECTION 1
DISASSEMBLY

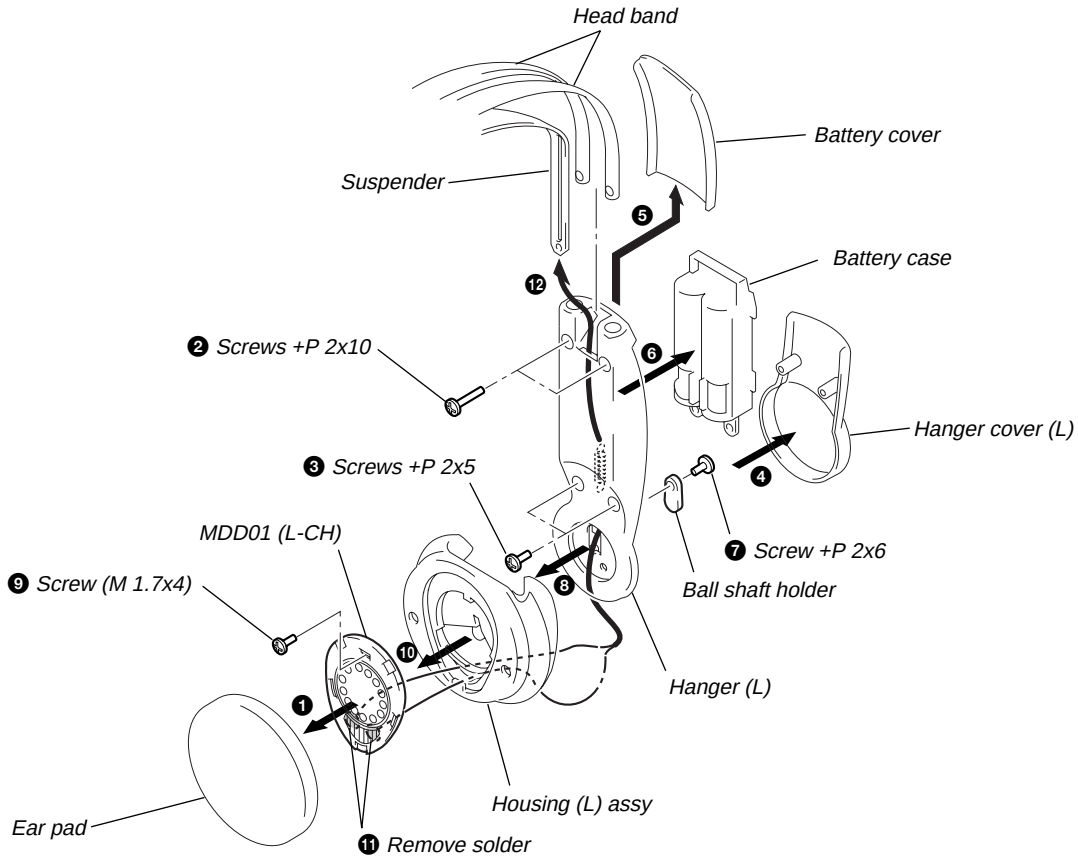
Note : Follow the disassembly procedure in the numerical order given.

MDR-RF430

1-1. RX BOARD, FE BOARD, RECEIVER (R-CH), SUSPENDER REMOVAL

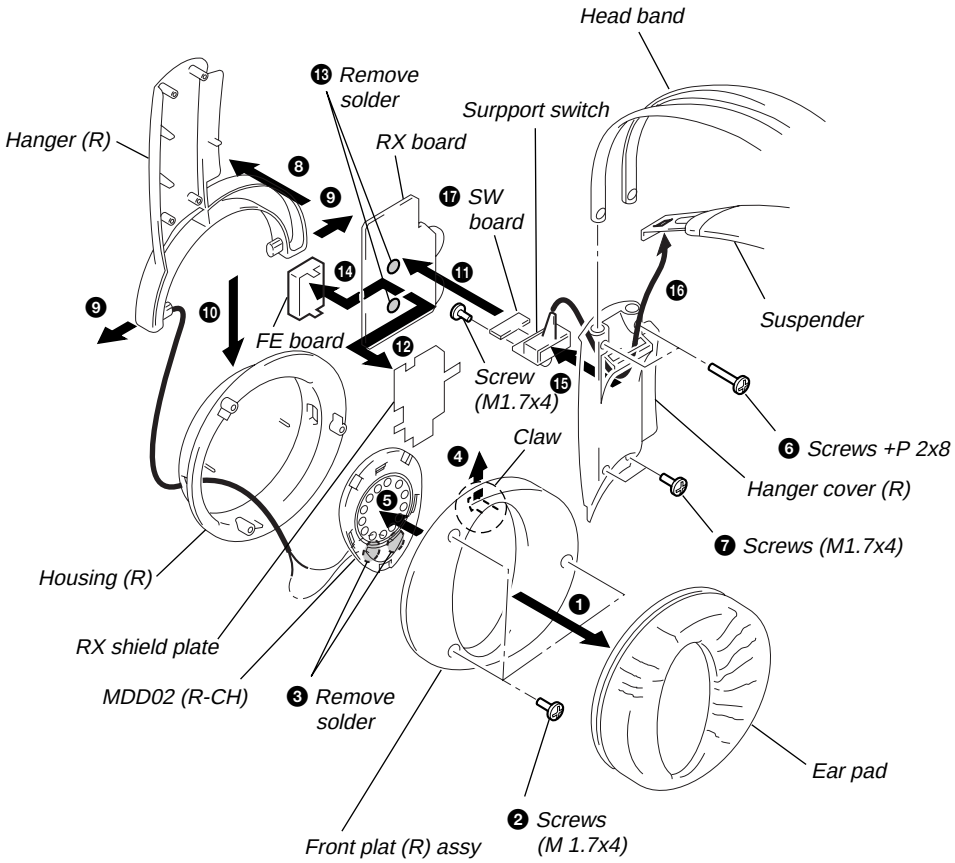


1-2. BATTERY CASE, RECEIVER (L-CH), SUSPENDER REMOVAL

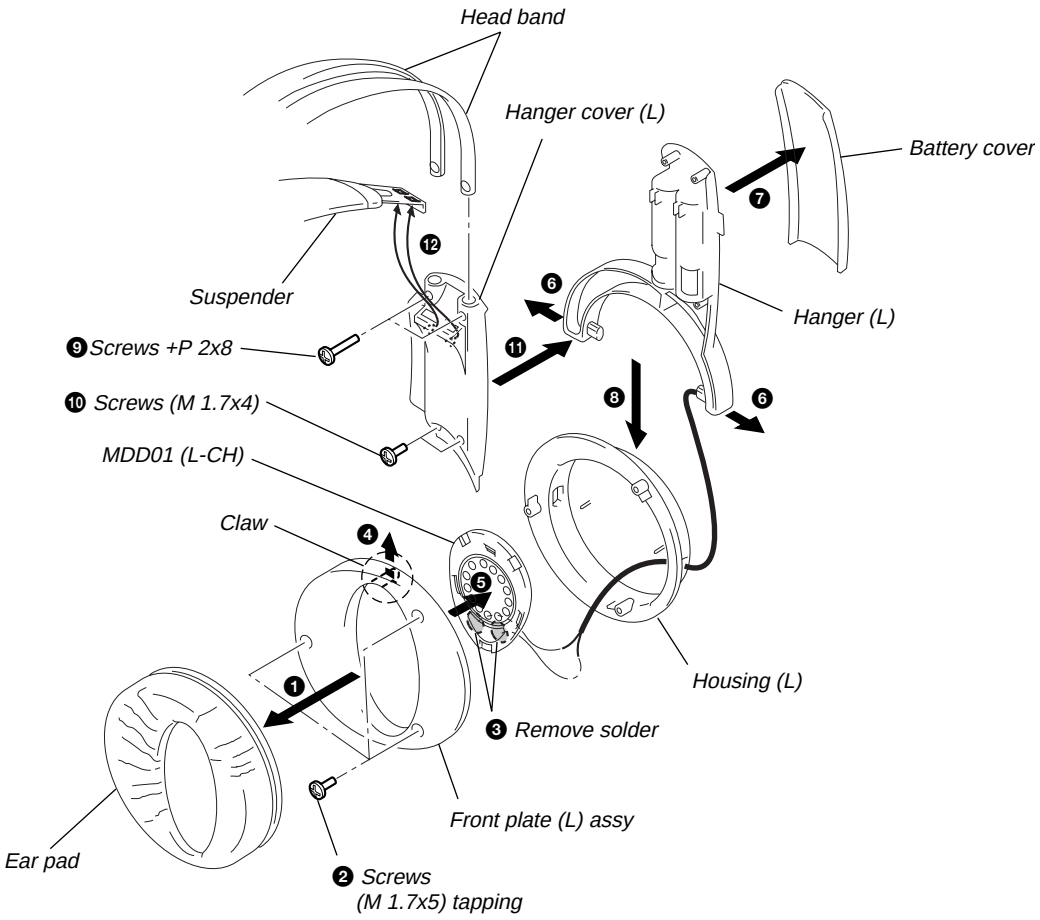


MDR-RF450

1-1. RECEIVER (R-CH), RX BOARD, FE BOARD, SUSPENDER ASSY REMOVAL



1-2. RECEIVER (L-CH), SUSPENDER ASSY REMOVAL



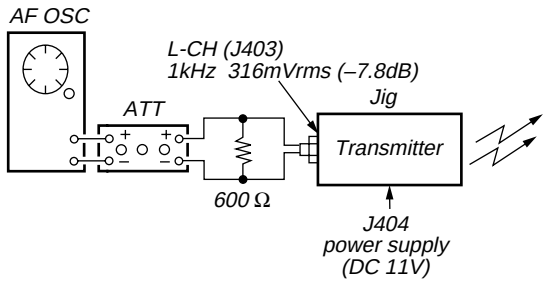
SECTION 2
ELECTRICAL ADJUSTMENTS

Note :

1. Use transmitter with check and adjustment already completed.
2. The transmitter section adjustments should be completed before performing the headphones section adjustment.
3. On adjusting the headphones section, use the transmitter as a jig.

Headphones	Transmitter
MDR-RF430 MDR-RF450	TMR-RF450R

Setting :



1. Feed a signal to jig (transmitter) and connect a power supply to DC IN 9V jack (J404).

Receive frequency check and adjustment

1. Set the transmitter channel to CH2.
2. Set the transmitter noise filter SW to OFF .
3. Input a signal of 1kHz 316mVrms to only the transmitter L-ch (J403).
4. Place transmitter and headphones at a distance of more than 5m apart.
5. Set the VOL (RV301) to MIN.
6. Position RX board TUNING VOL (RV302) to the center .
7. Connect a digital voltmeter (DC range) and an oscilloscope between IC301 pin ㉑ and GND.
8. First check to make sure that a demodulated waveform of 1kHz (approximately 13mVrms) is outputted to the oscilloscope , then check to make sure the DC voltmeter reading is DC 1–1.2V .
9. If a demodulated waveform of 1kHz is not outputted to the oscilloscope or if the DC level is not within the range specified above, adjust the RX board L301 so that a demodulated waveform of 1kHz is outputted to the oscilloscope and while the waveform is outputted, further fine adjust the L301 so that the DC voltmeter reading is DC 1.1V .
10. When completed, make sure signals can be received when switching the transmitter channel to CH1 or CH3 by turning RX board TUNING VOL (RV302).

Connection points and Adjustment Location :

RX board (See page 5)

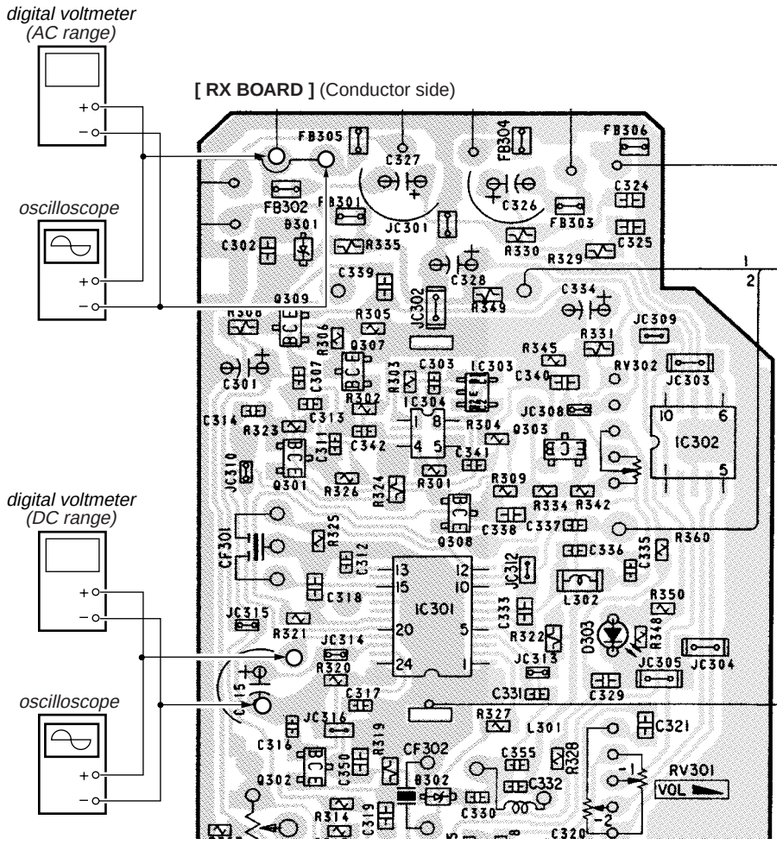
Separation check and adjustment

1. Set the transmitter channel to CH2.
2. Set the transmitter noise filter SW to OFF .
3. Input a signal of 1kHz 316mVrms to only the transmitter L-ch (J403).
4. Connect an digital voltmeter (AC range) and oscilloscope to the L-ch speaker outputs (both sides of MDD01).
5. Receive signals by turning the TUNING VOL (RV302).
6. Adjust the VOL (RV301) so that the RX board L-ch speaker outputs (both sides of MDD01) are 155mVrms.
7. Connect an digital voltmeter (AC range) and oscilloscope to the R-ch speaker outputs (both sides of MDD02) and measure the voltages.
8. At this time, check to make sure the level separation of L-ch and R-ch speaker outputs is more than 20dB. If the separation is less than 20dB, turn RV303 on the RX board so that the R-ch output is minimal, then check to see if the level separation of L-ch and R-ch speaker outputs is more than 20dB.
9. Input a signal of 1kHz 316mVrms to only the transmitter R-ch (J402).
10. Adjust the VOL (RV301) so that the RX board R-ch speaker outputs (both sides of MDD02) are 155mVrms.
11. Connect an digital voltmeter (AC range) and oscilloscope to the L-ch speaker outputs (both sides of MDD01) and measure the voltages.
12. At this time, check to make sure the level separation of L-ch and R-ch speaker outputs is more than 20dB.

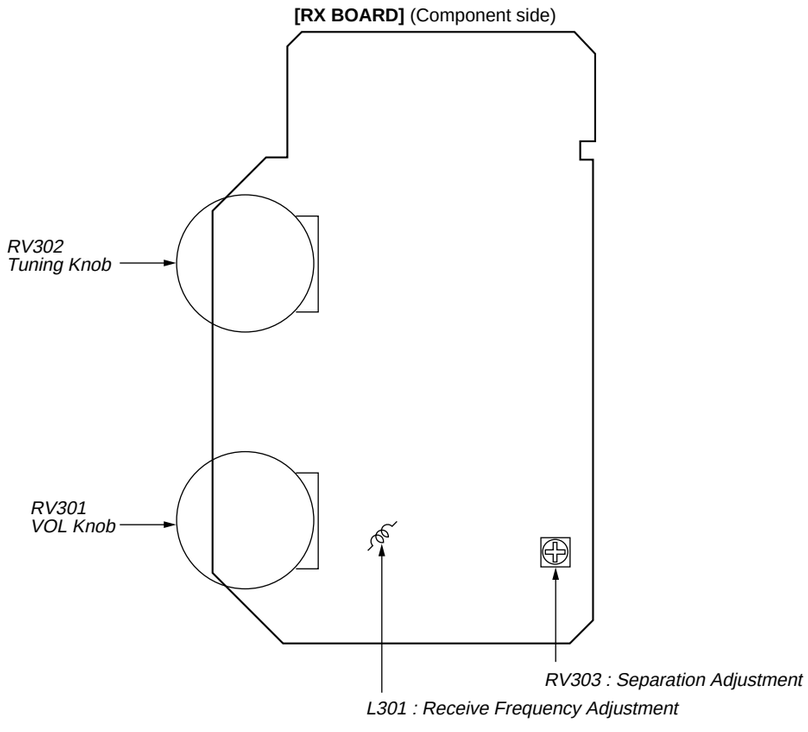
Connection points and Adjustment Location :

RX board (See page 5)

Connection points :



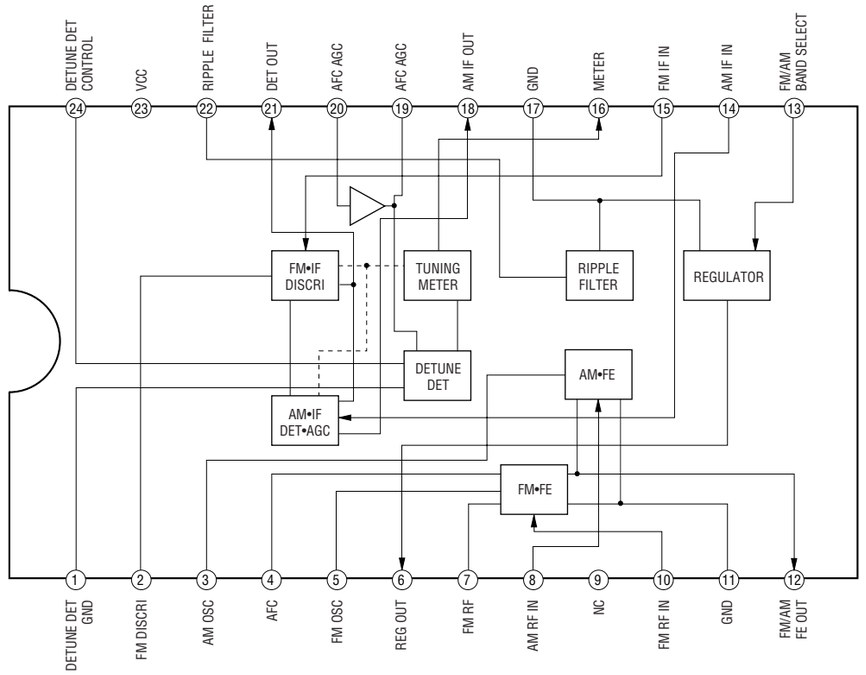
Adjustment Location :



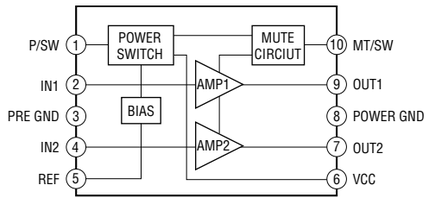
SECTION 3
DIAGRAMS

● IC BLOCK DIAGRAMS

IC301 CXA1611N-T4



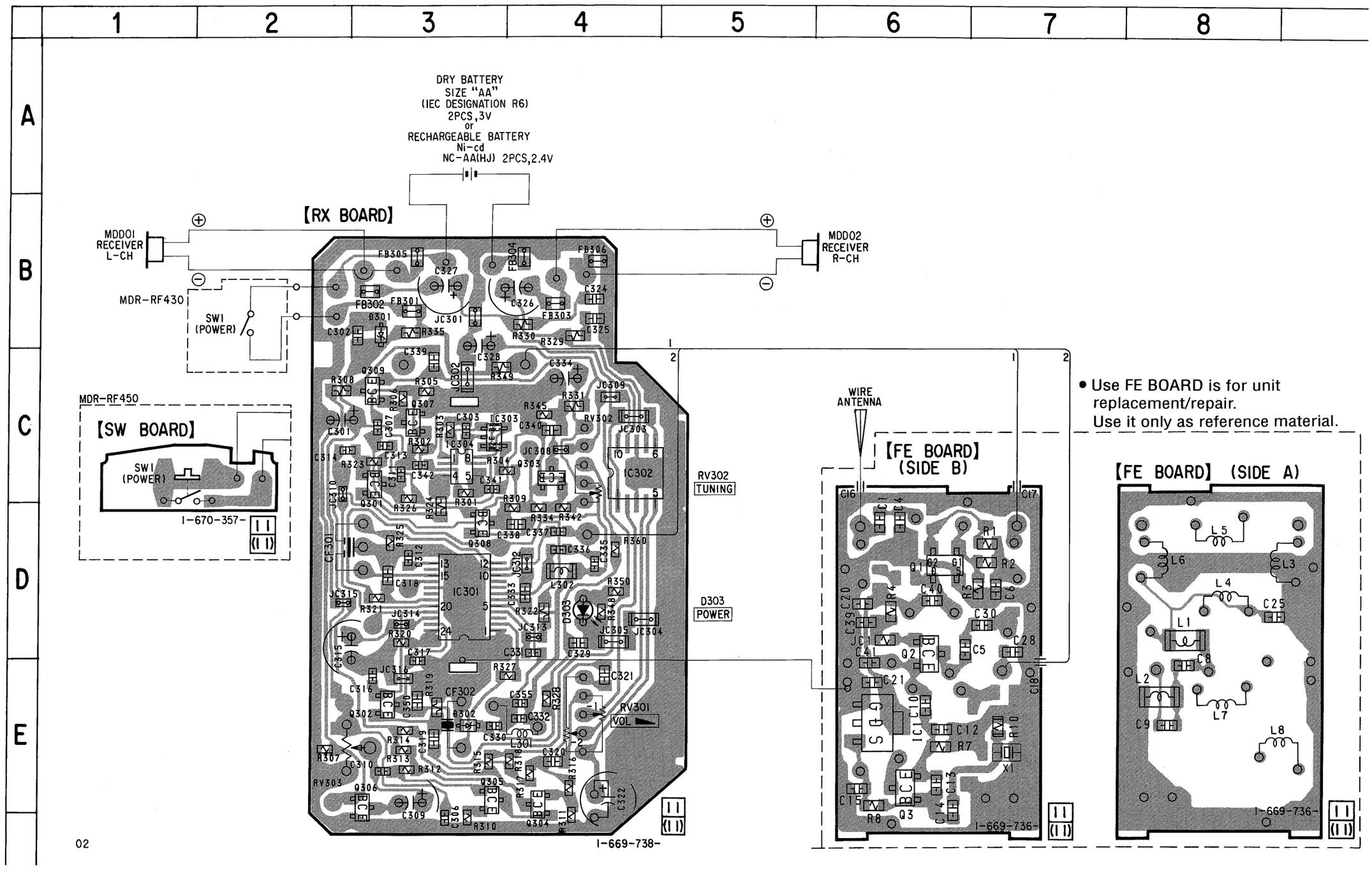
IC302 LA4533M



3-1. PRINTED WIRING BOARDS

- **SEMICONDUCTOR LOCATION**

Ref. No.	Location
D301	B-3
D302	E-3
D303	D-4
IC1	E-6
IC301	D-3
IC302	C-4
IC303	C-3
IC304	C-3
Q1	D-6
Q2	D-6
Q3	E-6
Q301	C-3
Q302	E-3
Q303	C-4
Q304	E-4
Q305	E-3
Q306	E-3
Q307	C-3
Q308	D-3
Q309	C-3



- Use FE BOARD is for unit replacement/repair.
  Use it only as reference material.

Note:

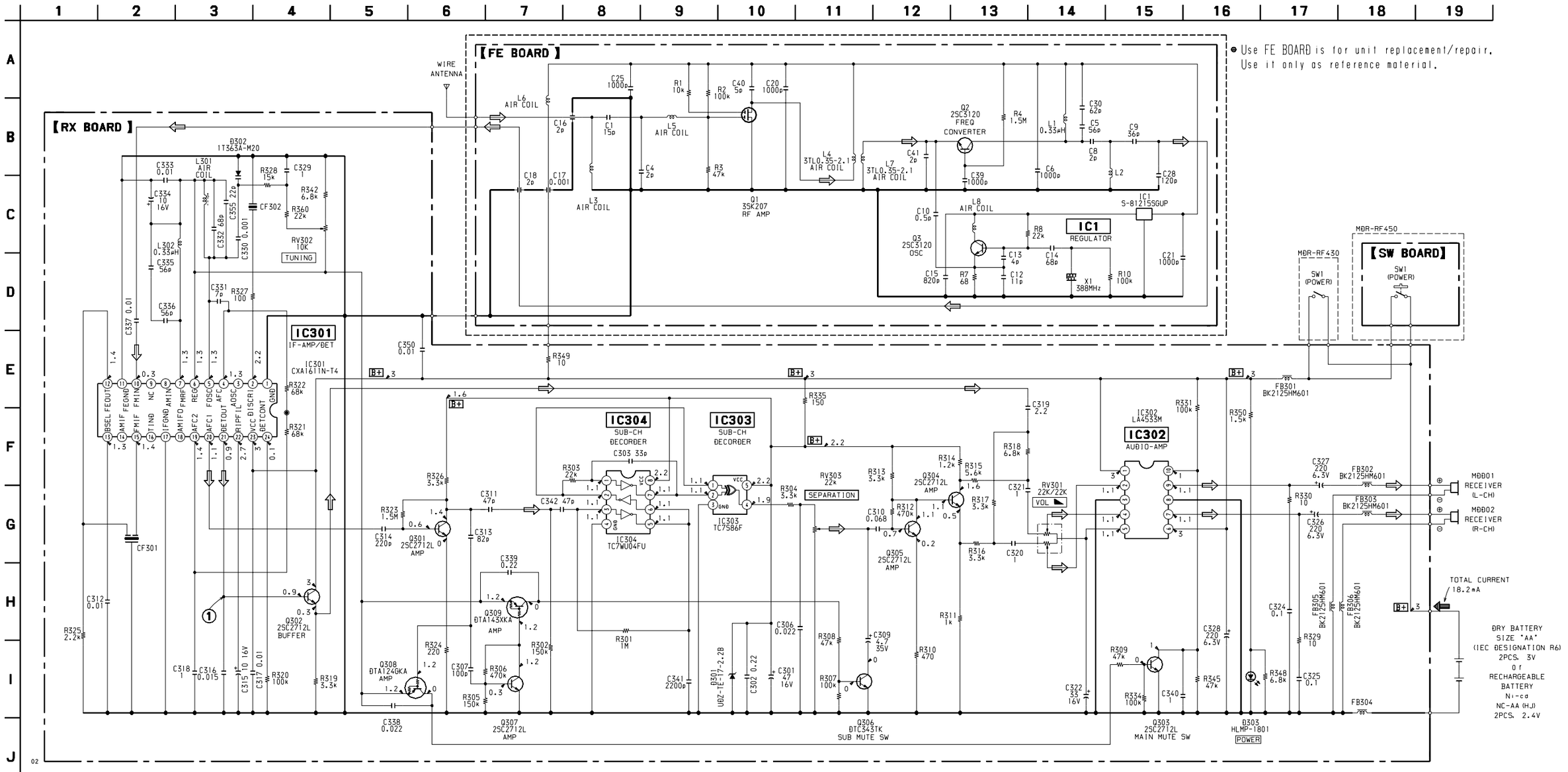
- ○——— : parts extracted from the component side.
- ○ : Through hole.
- ▒▒▒ : Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

Caution:	
Pattern face side: (Side B)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Side A)	Parts on the parts face side seen from the parts face are indicated.

3-2. SCHEMATIC DIAGRAM

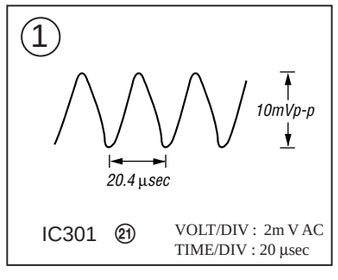
● Refer to page 6 for IC Block Diagrams.



Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- △ : internal component.
- B+ : B+ Line.
- ▭ : adjustment for repair.
- Power voltage is dc 3V and fed with regulated dc power supply from battery terminal.
- Voltages are dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path. ⇨

● **WAVEFORM**

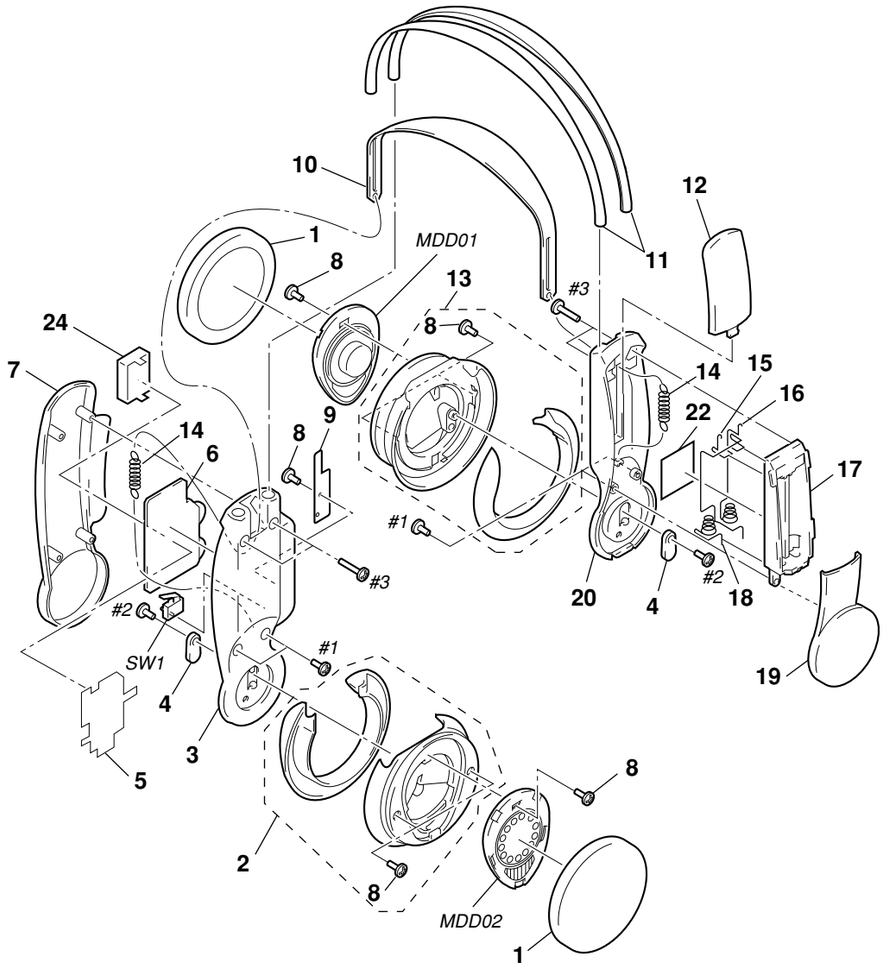


SECTION 4
EXPLODED VIEWS

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.

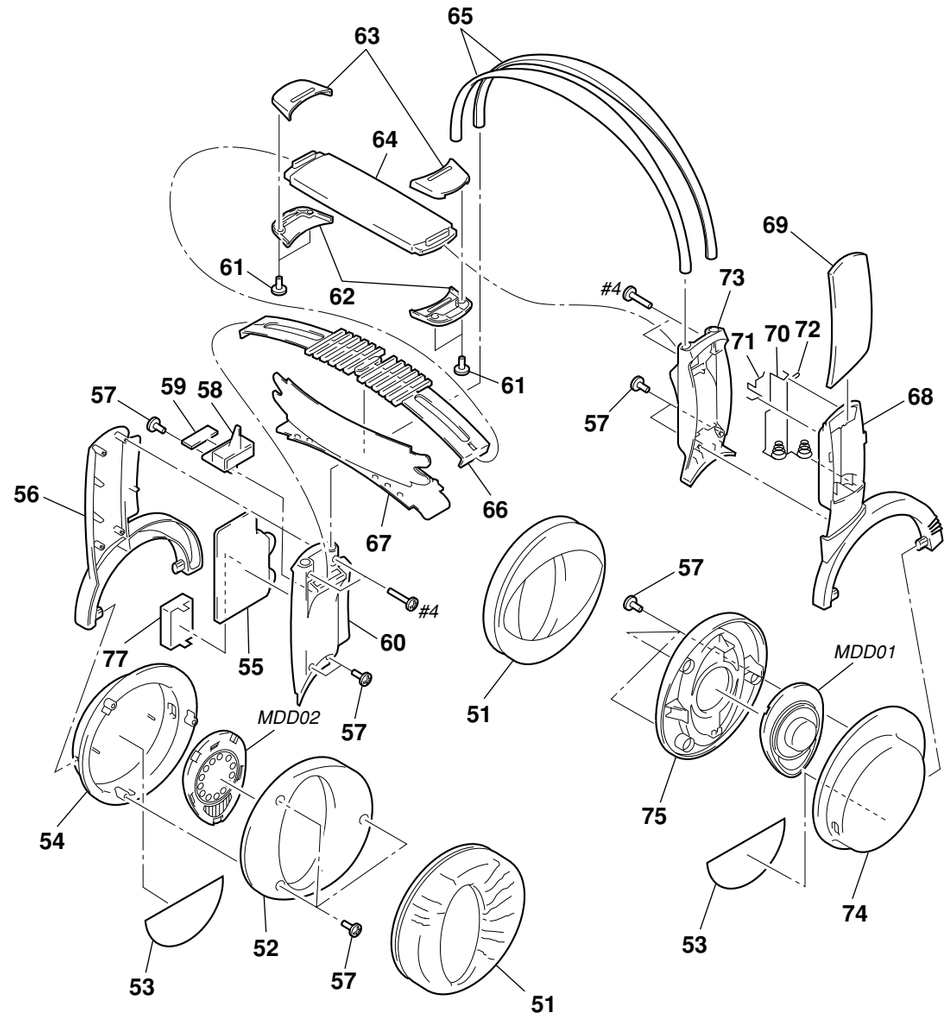
4-1. MDR-RF430



Ref. No.	Part No.	Description	Remark
1	4-994-129-01	PAD, EAR	
2	X-4950-086-1	HOUSING (R) ASSY	
3	4-994-119-01	HANGER (R)	
4	4-992-281-01	HOLDER, BALL SHAFT	
5	4-210-280-01	PLATE, RX SHIELD	
* 6	A-4542-510-A	RX BOARD, COMPLETE	
7	4-994-121-01	COVER (R), HANGER	
8	3-713-791-01	SCREW (M1.7X4), TAPPING, P2	
9	4-995-597-01	SPACER	
10	4-994-124-01	SUSPENDER	
11	4-994-118-01	BAND, HEAD	
12	4-994-123-01	COVER, BATTERY	
13	X-4950-087-1	HOUSING (L) ASSY	

Ref. No.	Part No.	Description	Remark
14	4-995-475-01	SPRING, TENSION	
15	4-994-130-01	TERMINAL (+), BATTERY	
16	4-994-132-01	TERMINAL (MIDWAY), BATTERY	
17	4-993-020-01	CASE, BATTERY	
18	4-994-131-01	TERMINAL (-), BATTERY	
19	4-994-122-01	COVER (L), HANGER	
20	4-994-120-01	HANGER (L)	
22	3-831-441-99	CUSHION, SPEAKER	
* 24	A-4542-531-A	FE BOARD, COMPLETE	
MDD01	1-505-117-21	RECEIVER (L-CH)	
MDD02	1-505-117-21	RECEIVER (R-CH)	
SW1	1-771-249-11	SWITCH, PUSH (1 KEY) (POWER)	

4-2. MDR-RF450



Ref. No.	Part No.	Description	Remark
51	4-977-785-01	PAD, EAR	
52	X-4950-101-1	PLATE (R) ASSY, FRONT	
53	4-999-774-01	REGISTER, HOUSING	
54	4-999-773-01	HOUSING (R)	
* 55	A-4542-510-A	RX BOARD, COMPLETE	
56	4-999-769-01	COVER (R), HANGER	
57	3-713-791-01	SCREW (M1.7X4), TAPPING, P2	
58	4-210-255-01	SUPPORT, SWITCH	
* 59	1-670-357-11	SW BOARD	
60	4-999-767-01	HANGER (R)	
61	3-318-203-62	SCREW (B1.7X4), TAPPING	
* 62	4-999-791-01	PANEL, BACK	
* 63	4-999-792-01	CASE	
64	4-978-519-01	CUSHION, HEAD	
65	4-999-765-01	BAND, HEAD	

Ref. No.	Part No.	Description	Remark
66	4-999-771-01	SUSPENDER	
67	4-978-518-02	BASE, SUSPENDER	
68	4-999-768-01	COVER (L), HANGER	
69	4-999-770-01	BATTERY COVER	
70	4-210-258-01	TERMINAL (MIDWAY), BATTERY	
71	4-210-256-01	TERMINAL (+), BATTERY	
72	4-210-257-01	TERMINAL (-), BATTERY	
73	4-999-766-01	HANGER (L)	
74	4-999-772-01	HOUSING (L)	
75	X-4950-100-1	PLATE (L) ASSY, FRONT	
* 77	A-4542-531-A	FE BOARD, COMPLETE	
MDD01	1-505-117-21	RECEIVER (L-CH)	
MDD02	1-505-117-21	RECEIVER (R-CH)	

SECTION 5
ELECTRICAL PARTS LIST

FE RX

NOTE :

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE :Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μ A.... , uPA.... : μ PA....
  uPB.... : μ PB.... , uPC.... : μ PC....
  uPD.... : μ PD....
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-4542-531-A	FE BOARD, COMPLETE			
		**********			
**********					
*	A-4542-510-A	RX BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C301	1-124-589-11	ELECT	47uF	20%	16V
C302	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C303	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C306	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C307	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C309	1-126-572-11	ELECT	4.7uF	20%	35V
C310	1-110-563-11	CERAMIC CHIP	0.068uF	10%	16V
C311	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C312	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C313	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C314	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C315	1-124-233-11	ELECT	10uF	20%	16V
C316	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C317	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C318	1-164-346-11	CERAMIC CHIP	1uF		16V
C319	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C320	1-164-346-11	CERAMIC CHIP	1uF		16V
C321	1-164-346-11	CERAMIC CHIP	1uF		16V
C322	1-124-242-00	ELECT	33uF	20%	25V
C324	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
C325	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V
C326	1-124-635-00	ELECT	220uF	20%	6.3V
C327	1-124-635-00	ELECT	220uF	20%	6.3V
C328	1-124-635-00	ELECT	220uF	20%	6.3V
C329	1-164-346-11	CERAMIC CHIP	1uF		16V
C330	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C331	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C332	1-164-441-91	CERAMIC CHIP	68PF	5%	50V
C333	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C334	1-124-233-11	ELECT	10uF	20%	16V
C335	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C336	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
C337	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C338	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C339	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C340	1-164-346-11	CERAMIC CHIP	1uF		16V
C341	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C342	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C350	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C355	1-162-919-91	CERAMIC CHIP	22PF	0.5PF	50V
		< FILTER >			
CF301	1-577-588-11	FILTER, CERAMIC			
CF302	1-567-163-11	FILTER, CERAMIC			
		< DIODE >			
D301	8-719-045-99	DIODE RD2.2M-T1B			
D302	8-719-002-81	DIODE 1T363			
D303	8-719-023-84	LED HLMP-1801 (POWER)			
		< FERRITE BEAD >			
FB301	1-414-234-11	INDUCTOR CHIP			
FB302	1-414-234-11	INDUCTOR CHIP			
FB303	1-414-234-11	INDUCTOR CHIP			
FB304	1-414-234-11	INDUCTOR CHIP			
FB305	1-414-234-11	INDUCTOR CHIP			
FB306	1-414-234-11	INDUCTOR CHIP			
		< IC >			
IC301	8-752-066-93	IC CXA1611N-T4			
IC302	8-759-802-75	IC LA4533M			
IC303	8-759-195-02	IC TC7S86F-TE85L			
IC304	8-759-096-87	IC TC7WU04FU(TE12R)			
		< JUMPER RESISTOR >			
JC301	1-216-295-00	METAL CHIP	0	5%	1/10W
JC302	1-216-296-00	METAL CHIP	0	5%	1/8W
JC303	1-216-296-00	METAL CHIP	0	5%	1/8W
JC304	1-216-296-00	METAL CHIP	0	5%	1/8W
JC305	1-216-296-00	METAL CHIP	0	5%	1/8W
JC308	1-216-864-11	METAL CHIP	0	5%	1/16W
JC309	1-216-295-00	METAL CHIP	0	5%	1/10W
JC310	1-216-864-11	METAL CHIP	0	5%	1/16W
JC312	1-216-295-00	METAL CHIP	0	5%	1/10W
JC313	1-216-864-11	METAL CHIP	0	5%	1/16W
JC314	1-216-864-11	METAL CHIP	0	5%	1/16W
JC315	1-216-864-11	METAL CHIP	0	5%	1/16W
JC316	1-216-295-00	METAL CHIP	0	5%	1/10W

RX **SW**

Ref. No.	Part No.	Description				Remark
		< COIL >				
L301	1-422-317-31	COIL, AIR-CORE				
L302	1-412-933-11	INDUCTOR	0.33uH			
		< TRANSISTOR >				
Q301	8-729-230-49	TRANSISTOR	2SC2712-YG			
Q302	8-729-230-49	TRANSISTOR	2SC2712-YG			
Q303	8-729-230-49	TRANSISTOR	2SC2712-YG			
Q304	8-729-230-49	TRANSISTOR	2SC2712-YG			
Q305	8-729-230-49	TRANSISTOR	2SC2712-YG			
Q306	8-729-920-31	TRANSISTOR	DTC343TK			
Q307	8-729-230-49	TRANSISTOR	2SC2712-YG			
Q308	8-729-040-78	TRANSISTOR	DTA124GKA-T146			
Q309	8-729-027-36	TRANSISTOR	DTA143XKA-T146			
		< RESISTOR >				
R301	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R302	1-216-847-91	METAL CHIP	150K	5%	1/10W	
R303	1-216-837-91	METAL CHIP	22K	5%	1/10W	
R304	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R305	1-216-847-91	METAL CHIP	150K	5%	1/10W	
R306	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R307	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R308	1-216-089-91	RES,CHIP	47K	5%	1/10W	
R309	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R310	1-216-817-11	METAL CHIP	470	5%	1/16W	
R311	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R312	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R313	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R314	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R315	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R316	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R317	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R318	1-216-831-91	RES,CHIP	6.8K	1%	1/10W	
R319	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R320	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R321	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R322	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R323	1-216-859-11	RES,CHIP	1.5M	5%	1/16W	
R324	1-216-033-00	METAL CHIP	220	5%	1/10W	
R325	1-216-825-91	METAL CHIP	2.2K	5%	1/16W	
R326	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R327	1-216-809-11	METAL CHIP	100	5%	1/16W	
R328	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R329	1-216-001-00	METAL CHIP	10	5%	1/10W	
R330	1-216-001-00	METAL CHIP	10	5%	1/10W	
R331	1-216-097-91	RES,CHIP	100K	5%	1/10W	
R334	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R335	1-216-029-00	METAL CHIP	150	5%	1/10W	
R342	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R345	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R348	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R349	1-216-001-00	METAL CHIP	10	5%	1/10W	
R350	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R360	1-216-837-91	METAL CHIP	22K	5%	1/10W	

Ref. No.	Part No.	Description	Remark
		< VARIABLE RESISTOR >	
RV301	1-223-968-11	RES, VAR, CARBON 20K/20K (VOL)	
RV302	1-225-641-11	RES, VAR, CARBON 10K (TUNING)	
RV303	1-238-601-11	RES, ADJ, CARBON 22K (SEPARATION)	
**********			
*	1-670-357-11	SW BOARD (RF450)	
		**********	
		< SWITCH >	
SW1	1-572-467-61	SWITCH, PUSH (1 KEY) (POWER) (RF450)	
**********			
		MISCELLANEOUS	
		**********	
MDD01	1-505-117-21	RECEIVER (L-CH) (RF430)	
MDD01	1-505-117-21	RECEIVER (L-CH) (RF450)	
MDD02	1-505-117-21	RECEIVER (R-CH) (RF430)	
MDD02	1-505-117-21	RECEIVER (R-CH) (RF450)	
SW1	1-771-249-11	SWITCH, PUSH (1 KEY) (POWER) (RF430)	
**********			
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT (RF430)	
#2	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT (RF430)	
#3	7-685-106-19	SCREW +P 2X10 TYPE2 NON-SLIT (RF430)	
#4	7-685-105-19	SCREW +P 2X8 TYPE2 NON-SLIT (RF450)	

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